Social Science, Freedom and American Energy Independence (July 31, 2009)

Washington, D.C. - Brian Baird on His Bill H.R. 3274

The most immediate action patriotic Americans can take to improve our national security, reduce the costs of energy, strengthen the economy and improve the health of our planet is to conserve and use energy more efficiently. Doing this immediately does not depend on development of new technologies or implementation of complex and costly infrastructure. All it really takes to make a start right now is for each of us to make decisions and take actions that are in our own financial best interest and in the interest of the country.

Choices we make and actions we take today can make a substantial difference in our energy expenditures, but it is also important that the new technologies of tomorrow be designed with an awareness of how people will use and interact with them and what factors will shape how people decide whether or not to use those technologies. This conclusion comes from experts who have testified at multiple hearings before the House Science and Technology committee and from reports such as the Northwest Energy Efficiency Taskforce, which specifically called for “Promoting greater understanding and use of behavioral aspects of energy efficiency”.

That is why I introduced H.R. 3247, a bill to establish a social and behavioral research program at the Department of Energy (DOE) and to integrate the results into other programs at the DOE.

The text of the legislation is available online at so I will not repeat it here. Instead, let me provide evidence from Science and Technology Committee hearings and real world examples of why this bill is needed.

House Committee Hearings

In the last two sessions of Congress, two of the subcommittees of the House Science and Technology Committee have held hearings on the contribution of social sciences to addressing energy efficiency and energy technologies in the United States.

During the 110th Congress, on September 25, 2007, the Subcommittee on Research and Science Education held a hearing titled “The Contribution of the Social Sciences to the Energy Challenge.” Witnesses from public and private sectors discussed how social sciences help predict or evaluate the effectiveness of public policies in changing individual and collective behavior related to energy use. They identified new and continuing areas of basic research in the social sciences that could significantly improve our ability to design effective technologies and policies.

In the 111th Congress, the Subcommittee on Energy and Environment held a hearing on April 28, 2009 to receive testimony on the role of DOE’s research and development programs in developing technologies, codes, and standards to enable deployment of net-zero energy, high-performance buildings and support energy efficiency in domestic industries. Here, one witness testified on the potential for increased energy efficiency through improved understanding of attitudes and behaviors that motivate people to take action to reduce personal energy use. The witness also explained how traditional approaches to energy efficiency could be improved by integrating results of behavioral sciences research into these programs.

Both hearings provide sufficient evidence for the need for integrated social and behavior research into the activities at the Department of Energy. Specific examples in research may better illustrate real world outcomes of such research.

Saving Taxpayers and Consumers Money Today

Most of us probably receive our electrical or gas bills in envelopes that also contain inserts with useful and well intended tips about how to lower our consumption and save energy. Those inserts may have some impact, but recent scientific research and practical commercial experience has shown that merely changing the way customer’s bills tell people about their personal energy use can substantially reduce energy consumption and thereby save customers money. Indeed, one company has shown a 2.5% savings in consumption as a result of this simple change in how information is presented on energy bills. That number may not sound very large, but if applied nationwide it would be the equivalent of taking 3 MILLION homes off the grid, saving consumers more than $20 Billion in energy costs over five years, and cutting 31 million metric tons of CO2 emissions every year. A simple change in how bills are presented to consumers saves them $20 Billion in energy costs. Not a bad return on investment for any technology or research program.

Take a second example, again based on social science research. Most hotels these days place small placards on beds or countertops encouraging people who stay multiple nights to recycle their towels as a way to help the environment. The good news is that these placards have some effect and more people are in fact recycling their towels. The even better news is that by changing the wording of these placards just a little, there is a thirty percent increase in recycling.

If someone told you that for absolutely no additional cost you could cut energy costs and water usage by thirty percent, wouldn’t you take them up on the deal? I would imagine so, but you would have to know how to make the change, and that is where research comes in. Ironically, it turns out that most hotels do not in fact use the most effective message and, hence, miss out on the savings because they do not know there is a better way to do things.

For yet another example, buildings consume some 40% of the energy used in the United States and research has repeatedly shown that how people “operate” buildings can vary tremendously. Educating consumers about how to best use their building space is not as easy as it may sound and is definitely not a matter of simply providing information. Making sure the information is understandable and usable and that obstacles to implementation are identified is essential to a successful outcome. Finding out how to do this takes research, just as surely as it takes research to develop new kinds of lighting or heating.

These and other simple measures are based on applications of basic social science research, much as developments of more efficient engines or generators are based on applications of basic research in physics, chemistry and engineering. The DOE has a long and successful record of funding and disseminating the physical and chemical research, but it has given relatively little attention to social and behavioral science, even though the studies described earlier suggest the gains and savings in energy efficiency from these studies may dramatically exceed those realized by some of the other research that is DOE funded.

Making Effective Use of Technology Tomorrow

While the kinds of actions described thus far can be implemented today with savings realized immediately, it should also be recognized that many of the other technologies DOE is working on need to consider social and behavioral factors as well.

For example, “Smart Grid” technology, which provides two way communication between power consumption and power generation and transmission is intended in part to give consumers more information and control over how and when to use energy at the optimal times and ways. Getting the economics of this system right will be critical to success and to realizing savings. Economics, as a social science, would be part of the research supported by the proposed legislation. It will also be essential to ensure that consumers receive information in a way that is meaningful

and motivating to them, and that they have, and will actually use, the technologies as they are intended.

The same could be said of other technologies ranging from hydrogen fuel vehicles to photovoltaic panels. Unless people are willing to adapt these technologies, they will have little effect. Understanding how people process information about new technologies and decide whether or not to adopt them can make a substantial difference in whether an innovation will succeed or not. So to, understanding how people interact with new technologies must be studied to make sure that the technologies are actually meeting people’s needs and desires. That is best accomplished if the social science researchers are working in close collaboration with other scientists and engineers. This is another reason it is so important to house such research at the DOE.

Some may argue that adaptation of new technologies is simply a matter of market forces and price signals. That may sound appealing, but it is, unfortunately, just not true. Here again, social science research in the field of behavioral economics, has demonstrated in numerous experiments and real world examples that rational economic decisions are by no means the guiding force behind much of our behavior. The psychologist Dr. Daniel Kahneman received the 2002 Nobel Prize in economics for his research in this area. Much of that research has direct relevance to energy usage decision making.

As Kahneman and many others have shown, the same factual information presented in slightly different ways can lead to dramatically different choices and outcomes. In other words, again, it is not enough merely to “give people information”, because it turns out there are lots of different ways to give people the same information and even when they receive that information they may not understand or use it as well as if it were presented in a different way.

Response to Critics of “Mind Control”

Based on testimony from experts and documents such as the NEET report, I assumed that giving examples of realizing thirty percent savings in energy and water costs with zero upfront additional expenditure might have appealed to my colleagues in Congress and to most Americans as well. I introduced this bill because I believe the scientific and practical evidence is compelling that this knowledge and these kinds of measures can help solve our nation’s energy challenges and so they should be further studied and utilized.

Unfortunately, as should perhaps not be surprising in a politically charged and motivated institution such as Congress, some of my colleagues decided to put an unexpected and unwarranted political spin on this and try to suggest that I am advocating “mind control” (yes, they really used those words). A few television personalities then picked up this accusation and suddenly there was a great uproar among a certain element of the public and media.

This reaction is interesting in that, on the one hand, some seem to suggest that we don’t need to do any social science research because it only tells us things we already know. If that were so, then why are we not already doing the kinds of things I described earlier that can realize such significant savings?

At the same time, some of the very people who suggest social science is a waste of time, then seem to be frightened that it will yield such powerful results that the government can engage in “1984” type mind control. Some even went so far as to suggest this was a step toward taking away free will and freedom itself.

The reality is just the reverse. Giving people meaningful and useful information about their energy consumption and opportunities to save money in fact gives people more control, not less. Helping better understand how to reduce our dependence on foreign oil enhances our national security and individual freedoms. Studying how people interact with new technologies will make those technologies more user friendly and, as a result, give people more control over those technologies if people decide to adopt them.

We may think it is obvious how to do all this, but it is not at all obvious or more people would be doing it already. Basic and applied social science research is helping us understand how to do beneficial things more effectively, which, after all, is exactly what research in every field is designed to do, whether it is in the Social or the Physical sciences.

The scientific evidence, which one would hope should actually matter when legislation is before the Science and Technology Committee of the House, is not that anyone is going to gain control over people’s thoughts and behaviors, nor does anyone seek to do that. The evidence is clear that how information is communicated, how economic

incentives are structured, how new technologies interact with the people who will actually use them matters. In many cases, it matters a great deal.

Given the savings that can be realized for our taxpayers and for our nation, and considering the urgency of the challenges we face, this is a thoroughly appropriate topic for the Science and Technology committee and would be money well invested by the Department of Energy.

CLICK HERE to read the entire text of H.R. 3247.

CLICK HERE to read the H.R. 3247 Section By Section Summary.

CLICK HERE to read an article in the July/Aug 09 issue of The Atlantic, describing the need to integrate social and energy research.